

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| Application No. | : 10/579,075 | Confirmation No. | : 1578 |
| First Named Inventor | : Hubert KOCH | | |
| Filed | : November 3, 2004 | | |
| TC/A.U. | : 1736 | | |
| Examiner | : Brian D. Walck | | |
| Docket No. | : 056226.57663US | | |
| Customer No. | : 23911 | | |
| Title | : Cast Aluminum Alloy | | |

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I, Blanka LENCZOWSKI, hereby declare as follows:

1. I am a citizen of Germany, residing at Kaiserstr. 2, D-85579 Neubiberg.
2. I attended Montan-University in the Czech Republic from 1982-1986 and received a degree in metallurgy from Montan-University in 1986. I also attended the University of Siegen in Germany from 1988-1992 and received a doctorate in engineering from the University of Siegen in 1992.
3. Prior to attending the University of Siegen, I was an engineer at a company in the Czech Republic. Since earning my doctorate degree, I have been employed by EADS Deutschland GmbH, the assignee of the above-identified U.S. Patent Application No. 10/579,075 ("the '075 application"), working in the area of Materials Technology. I currently hold the position of Senior Expert in Materials Technology at EADS Deutschland GmbH. My work at EADS Deutschland GmbH has involved and continues to involve aluminum alloys.
4. I am an author of many publications regarding aluminum alloys and have

given many presentations on aluminum alloys. A list of my publications and presentations is attached. I am also an inventor on various patent applications and patents directed to aluminum alloys. A list of my patent applications and patents is attached.

5. I am the inventor of '075 application and make this Declaration in support of the '075 application, which claims a cast aluminum alloy.

6. I have reviewed the Office Action dated May 20, 2011 ("Office Action") and U.S. Patent No. 3,619,181 ("Willey") and U.S. Patent No. 5,620,652 ("Tack et al.") cited in the Office Action. I understand that claims 17, 20-23, 26-29, 31-34, 36, and 37 of the '075 application stand rejected under 35 U.S.C. § 103(a) as obvious over Willey in view of Tack et al.

7. The present claims are directed to a cast aluminum alloy. The cast aluminum alloy comprises aluminum, 3.0-6.0 % by weight magnesium (Mg), > 1.0 - 4.0 % by weight silicon (Si), 0.01 - < 0.5 % by weight scandium (Sc), 0.05-0.15 % by weight titanium (Ti), and at least 0.001 % by weight gadolinium (Gd). Other elements may be present in the cast aluminum alloy but are not required. The total amount of impurities in the cast aluminum alloy is not more than 0.5 % by weight and no single impurity in the cast aluminum alloy is present in an amount of more than 0.1 % by weight.

8. One of ordinary skill in the art, reading Willey as a whole, would understand that Willey is directed to wrought aluminum alloys. Wrought aluminum alloys are alloys produced in ingot or billet form and subsequently worked by any number of processes such as rolling, extruding, forging, drawing, or another metal working process. The working produces semi-finished products from which end-use products are subsequently made. While Willey does not explicitly state it is directed to wrought aluminum alloys, the following passages of Willey indicate to one of ordinary skill in the art that Willey is directed to wrought aluminum alloys:

| | |
|---------------------|--|
| Col. 2, lines 50-56 | "Representative aluminum and aluminum alloys to which scandium may be added according to my invention as identified by The Aluminum Association are 7075, 7079, 7178, 7005, 7039, 6061, 6351, 6161, 6063, 5005, 5050, 5052, 5083, 5454, 5456, 3003, 3005, 2014, 2017, 2618, 2219, 2020 and 2024." ¹ |
| Col. 2, lines 65-66 | "The resultant alloys were cast in ingot form and cold rolled to a reduction of 89 percent." |
| Col. 3, lines 5-15 | "Similar effects are observed when a 99.903 percent pure aluminum, the balance being 0.054 percent of iron and 0.043 percent of silicon, is alloyed with 1 percent by weight of manganese and small amounts of scandium, cast in ingot form and then cold rolled to an 89 percent reduction." |
| Table IV | See footnotes. |
| Col. 5, lines 4-7 | "What is said immediately above is generally illustrated in the following table V, where is shown the effect of aging after cold working of aluminum and of various aluminum alloys as herein defined." |
| Col. 6, lines 9-10 | "In each case the cold worked metal, after having been given the indicated heat treatment for 30 minutes and then quenched in cold water was aged for 8 hours at about 285°-290°C." |
| Col. 8, lines 69-74 | "Instances of the above are presented in the following table VII both in respect to previously mentioned alloys and additional alloys. In each case the cold worked metal, after having been given the indicated heat treatment was subjected to an aging operation under the indicated conditions of time and temperature." |
| Table VIII | See footnotes 2-5. |

¹ Wrought aluminum alloys are identified by a four digit number, as shown in the attached excerpt of Dr. John Datta, Key to Aluminum Alloys, 5th Edition, 1997. The excerpt lists most of these representative wrought aluminum alloys.

9. Tack et al. also shows that one of ordinary skill in the art, reading Willey as a whole, would understand Willey is directed to wrought aluminum alloys. Tack et al. discusses Willey at col. 1, lines 49-59:

“Among all alloying elements used to strengthen *wrought* aluminum alloys, scandium (Sc), despite its rare occurrence, has received significant attention. For instance, U.S. Pat. No. 3,619,181 to Willey discloses the addition of Sc to a wide range of binary, ternary, and multicomponent alloy systems. It is claimed that the aluminum alloys that can be strengthened with Sc additions include *wrought* aluminum alloys identified by the Aluminum Association such as 7075, 7079, 7178, 7005, 7039, 6061, 6351, 6161, 6063, 5005, 5050, 5052, 5083, 5454, 5456, 3003, 3005, 2014, 2017, 2618, 2219, 2020 and 2024.” Emphasis added.

Tack et al. does not discuss Willey as disclosing aluminum alloys in general, including cast aluminum alloys. Rather, Tack et al. interprets Willey as being directed to wrought aluminum alloys.

10. Cast aluminum alloys and wrought aluminum alloys are significantly different. Unlike wrought aluminum alloys, cast aluminum alloys are not subjected to subsequent rolling, extruding, forging, drawing, or another metal working process. Rather, cast aluminum alloys refer to alloys that are used in parts cast to final or near-final shape and to the ingot form from which such castings are made.

11. The properties of aluminum alloys result from the processes by which they are made. Since cast aluminum alloys are not subjected to a working process, the properties of cast aluminum alloys depend on their chemical composition and the casting process. In contrast, the properties of wrought aluminum alloys depend on their chemical composition and the working process.

12. Due to these differences, one of ordinary skill in the art would not have had a rational reason and a reasonable expectation of success in utilizing the alloying elements disclosed in Willey in the amounts disclosed in Willey in a cast aluminum alloy. One of ordinary skill in the art would not have reasonably expected utilizing the alloying elements disclosed in Willey in the amounts disclosed in Willey would produce a cast aluminum alloy with properties the same as or similar to Willey's wrought aluminum alloys.

13. I hereby declare that all statements made herein of my own knowledge are true, and all statements made on information and belief are believed to be true, and further, these statements were made with the knowledge that willful false statements and the like, so made, are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-identified patent application or any patent issued thereon.

Date: 04 Nov. 2011

Signature: _____

[Dr. Blanka LENCZOWSKI]

Dr. Blanka Lenczowski

Senior Expert – Materials Technology
Metallic Technologies & Surface Engineering

EADS Innovation Works

81663 Munich

Germany

Tel.: +49-89/607 227 27

Fax.: +49-89/607 25408

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Special Tasks:

Reviewer for „International Journal of Materials Research“

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List of Patents from Dr. Blanka LENCZOWSKI (16. Sept. 2011)

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List of Patents from Dr. Blanka LENCZOWSKI (16. Sept. 2011)

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List of Patents from Dr. Blanka LENCZOWSKI (16. Sept. 2011)

Title

Weldable, corrosion-resistant ALMG alloys, especially for manufacturing means of transportation

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Weldable, corrosion-resistant ALMG alloys, especially for manufacturing means of transportation

Weldable anti-corrosive aluminium-magnesium alloy containing a high amount of magnesium, especially for use in aviation

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Weldable anti-corrosive aluminium-magnesium alloy containing a high amount of magnesium, especially for use in aviation

List of Patents from Dr. Blanka LENCZOWSKI (16. Sept. 2011)

Weldable anti-corrosive aluminium-magnesium alloy containing a high amount of magnesium, especially for use in aviation

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Method for shaping structures comprised of aluminum alloys

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Non-hardenable aluminium alloy for semi-finished product for structures

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Fibre reinforced composite material as well as method for producing the same

A method of producing a metallic composite material with embedded carbon nanotubes and a method of producing a structural component comprising this metallic composite material